

13th Colloquium Lecture, School of Mathematics Faculty of Mathematics and Physics

Andrea Cianchi

(University of Florence, Italy)

Monday, February 23, 2015, 15:40, Lecture hall K1

Eigenfunctions of the Laplace-Beltrami operator and geometric inequalities

I shall discuss some methods of geometric nature in the study of qualitative and quantitative aspects of eigenvalue problems for the Laplace operator, and of its analogue on Riemannian manifolds. Two questions will be especially focused. On the one hand, information on the spectrum of the Laplacian, and, in particular, on its discreteness, will be provided. On the other hand, criteria for the regularity of eigenfunctions, and specifically their integrability and boundedness, will be illustrated. The results to be presented are the fruits of a collaboration with V. G. Maz'ya.

About the speaker

Andrea Cianchi is a Professor of Mathematics at the University of Florence. He is author or coauthor of about eighty-five research papers as well as of a dozen of other contributions including conference notes, survey papers and lecture notes of international schools. His scientific expertise ranges from quantitative and qualitative properties of solutions of elliptic PDEs, to inequalities of Sobolev type in unconventional spaces, to isoperimetric and isocapacitary inequalities, to fine properties of symmetrizations and rearrangements. He cooperates extensively with Czech mathematicians. Recently he has been awarded the title of Guest Professor of Charles University in Prague.

Colloquium Lecture

This 13th Colloquium Lecture of the School of Mathematics is organized in the framework of the *Nečas Seminar on Continuum Mechanics* in cooperation with the *Nečas Center for Mathematical Modeling*.

Further information

<http://msekc.karlin.mff.cuni.cz/colloquia>